MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2017/2018

TIS3151 – SOFTWARE RELIABILITY AND QUALITY ASSURANCE

(All sections / Groups)

9th March 2018
3 pm - 5 pm
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 3 pages excluding the cover page with 5 Questions only.

2. Attempt all **FIVE** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please print all your answers in the Answer Booklet provided.

QUESTION 1

a. What is the uniqueness of **software** quality assurance?

[2 Marks]

b. Nine main causes of errors have been identified. Based on the description given below, identify the specific cause of error:

(i) Misunderstanding of client's requirements – changes presented orally to the developer

(ii) Developer initiated unapproved improvements to the software

[2 Marks]

c. Consider the case below: Associate **FOUR** McCall's quality factors with the clearly mentioned functionality. **State the quality factor and justify your answers.**

A local bank offers an online banking system for use by its customers. This system allows all its customers to access their banking accounts at any time and from anywhere with the Internet connection.

This online system allows the customers to update their profile if there is a change in the address, contact number or hand-phone number and provides option for the customer to change their passwords if required.

However, the system disallows the customer to change information related to their accounts such as account number, date the account was opened and type of account. The bank also promises that the online system shall operate 24x7 allowing only 1 failed- transaction per 365 days. When the customer makes an online payment through the system, it always displays the amount being transacted and the balance of the account to ensure all amounts are tallied.

The customers find it easy to use the system and they do not need to take a long time to learn to use the system as they are guided by instruction when moving from one operation to another. Moreover, if wrong inputs are entered, the customers are prompted with messages to ask them to undo or redo some certain actions to rectify their erroneous moves.

[6 Marks]

Continued....

QUESTION 2

a. State the importance of having a 'Formal Design Review'.

[2 Marks]

b. What would be the advantage of using a prototyping model as compared to the SDLC model in software development? State any **FOUR**.

[2 Marks]

c. Sarah plans to use the top-down approach of testing for her project.

(i) Explain the top-down approach stated above using a simple diagram

[2 Marks]

(ii) Since a few of the bottom modules would have not been completed in the initial stages of testing, how will he test the upper modules?

[1 Mark]

d. Imran is developing a software system for an in-house requirement.

(i) Is it necessary for him to have a contract review done?

[1 Mark]

(ii) What would be the risks he will be taking if he decides not to have a contract review done?

[2 Marks]

QUESTION 3

a. Why is it that hardware reliability metrics are not suitable for software?

[2 Marks]

b. Henry the programmer used information hiding technique and found that his program was less complex.

(i) What is information hiding?

[1 Mark]

(ii) Explain the chief mechanism used for information hiding?

[1 Mark]

c. While writing the software **process quality metrics**, the quality manager had to classify the process quality. What do you think would be these classes?

[2 Marks]

d. A 'Foreign Exchange transaction' system is being used. The system is used to do trading with different countries.

(i) State whether this is a critical system or a general operating system

[1 Mark]

Continued....

(ii) Explain the type of reliability metrics that will be used for this system

[2 Marks]

(iii) Give a sample unit of how these metrics will be stated

[1 Mark]

QUESTION 4

a. A new member to the verification and validation (V &V) team needs to prepare a process improvement plan.

(i) To which part of the V &V plan will he have to refer to?

[1 Mark]

(ii) What does this part of the V & V plan contain?

[3 Marks]

b. Mr. Sridhar the quality manager wants to involve his employees in the quality process. State any **FOUR** TQM implementation steps that he will have to use for employee involvement.

[4 Marks]

c. Mr. Azrul is in charge of the requirements phase during the Verification and validation process. What are the two main activities he will have to carry out?

[2 Marks]

QUESTION 5

a. ABC software could not sell their newly developed software as they had overrun their schedule and other vendors had captured the market.

(i) Based on the description above, identify the risk involved.

[1 Mark]

(ii) How could they have minimized this risk?

[2 Marks]

b. The Quality Manager for Softech Sdn. Bhd wanted to implement ISO 9000 within the organization. How would he convince the top management on the benefits of the ISO certification standards?

[3 Marks]

c. What is Process Institutionalization? How does it help in process improvement?

[2 Marks]

d. Mr. Khan explained the Risk management paradigm in a simple 5 step process. What are the risk management steps that he discussed?

[2 Marks]

End of Page